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Follis

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(54) **APPARATUS TO ENABLE A HANDICAPPED PERSON TO INSTALL AND SERVICE A DEVICE ADJACENT A CEILING**

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(51) **Int. Cl.**

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| G06F 11/10 | (2006.01) |
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| G06F 11/14 | (2006.01) |
| G06F 21/57 | (2013.01) |

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CPC **G06F 9/4401** (2013.01); **F16M 13/00** (2013.01); **F16M 13/022** (2013.01); **G06F 11/1004** (2013.01); **G06F 16/1734** (2019.01); **G06F 16/18** (2019.01); **G06F 11/1417** (2013.01); **G06F 21/575** (2013.01); **G06F 21/64** (2013.01)

(58) **Field of Classification Search**

CPC G06F 9/4401; G06F 11/1004; G06F 16/1734; G06F 16/18; G06F 11/1417; G06F 21/575; G06F 21/64; G06F 11/106; G06F 8/63; F16M 13/00; F16M 13/022
See application file for complete search history.

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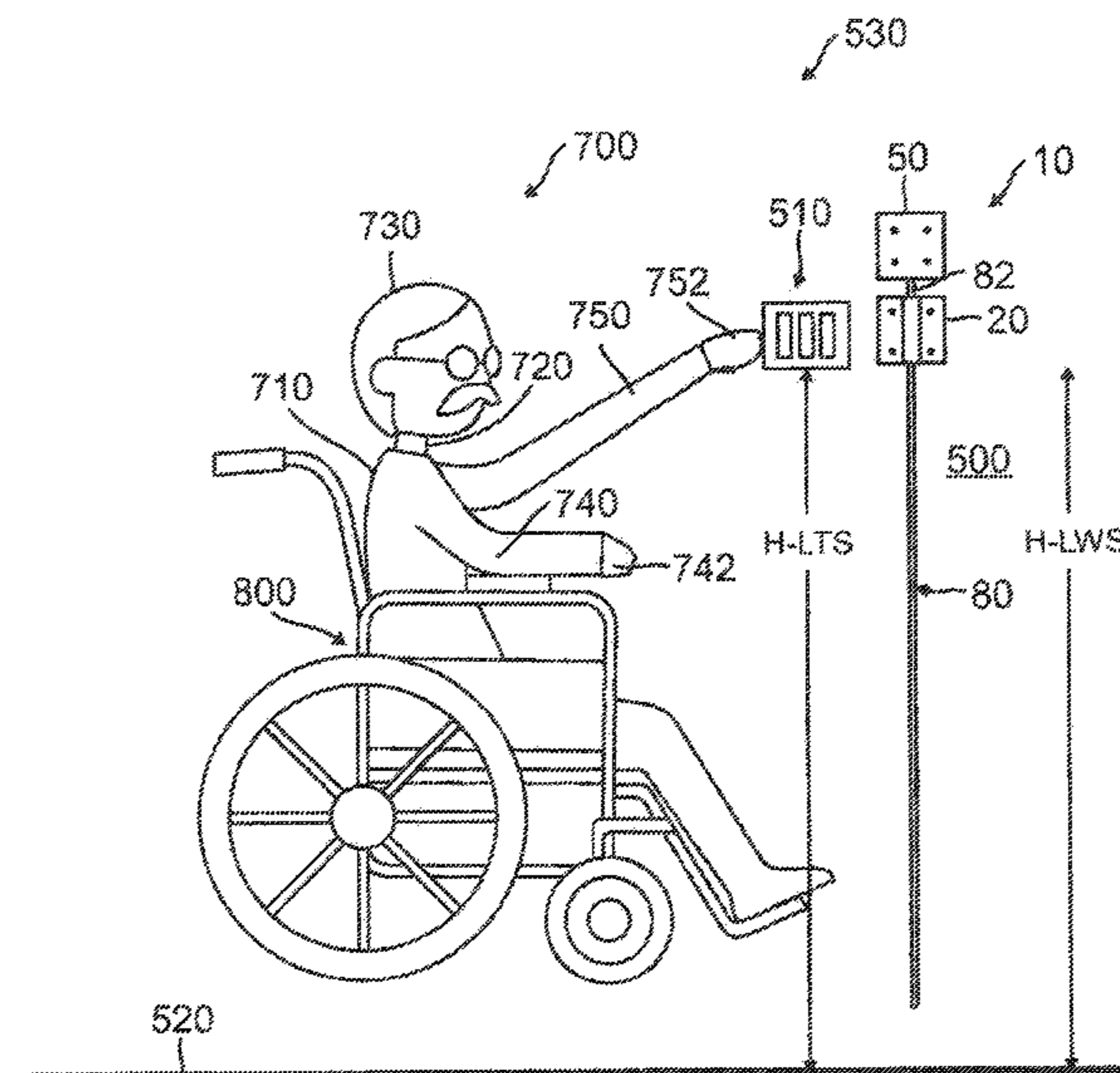
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Primary Examiner — Amy J. Sterling

(57) **ABSTRACT**

An apparatus to enable people who are handicapped, especially those who are wheelchair bound, to be able to install and replace objects that are affixed near the ceiling. The apparatus includes a lower level affixed at a location within reach of a seated person and including a vertical height adjustment pole movably retained by plate at the lower level. A top plate retains a device which is positioned adjacent a ceiling. The top plate is affixed adjacent a top end of the vertical height adjustment pole. The vertical height adjustment pole is lowered to be in reach of the seated person to enable the seated person to work on the device retained on the top plate. After work on the device is completed, the vertical height adjustment pole is retained so that the top plate is adjacent a ceiling.

4 Claims, 11 Drawing Sheets



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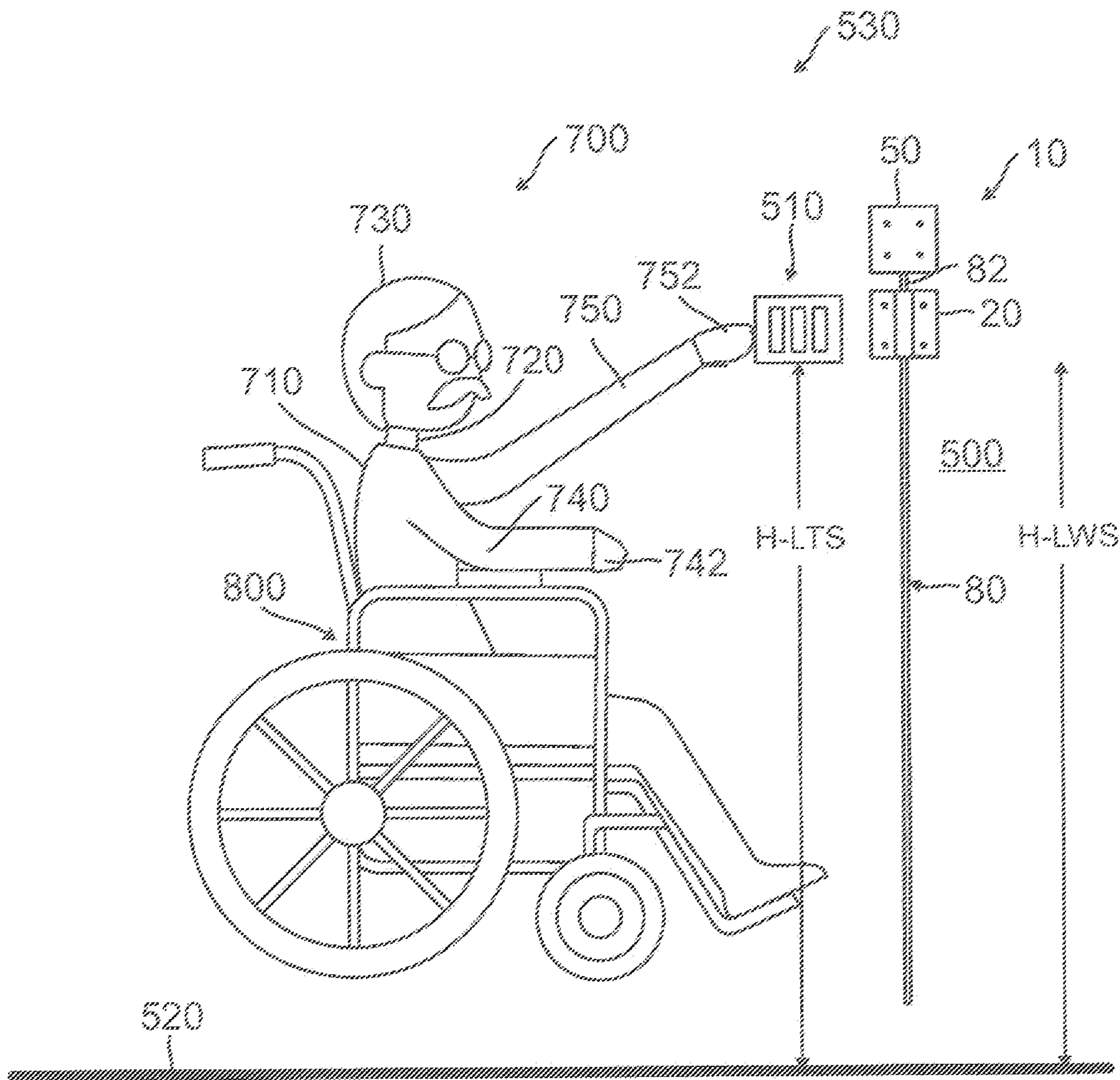


FIG. 1

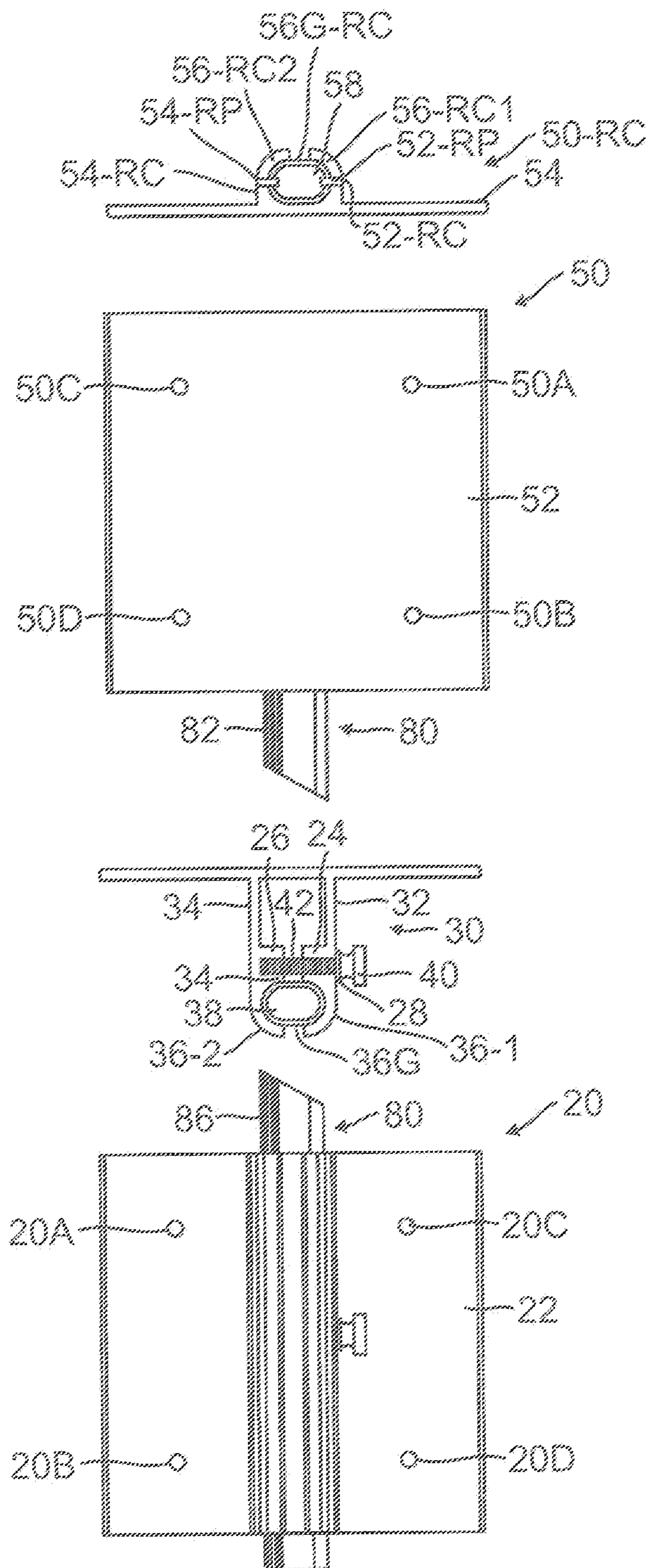


FIG. 2

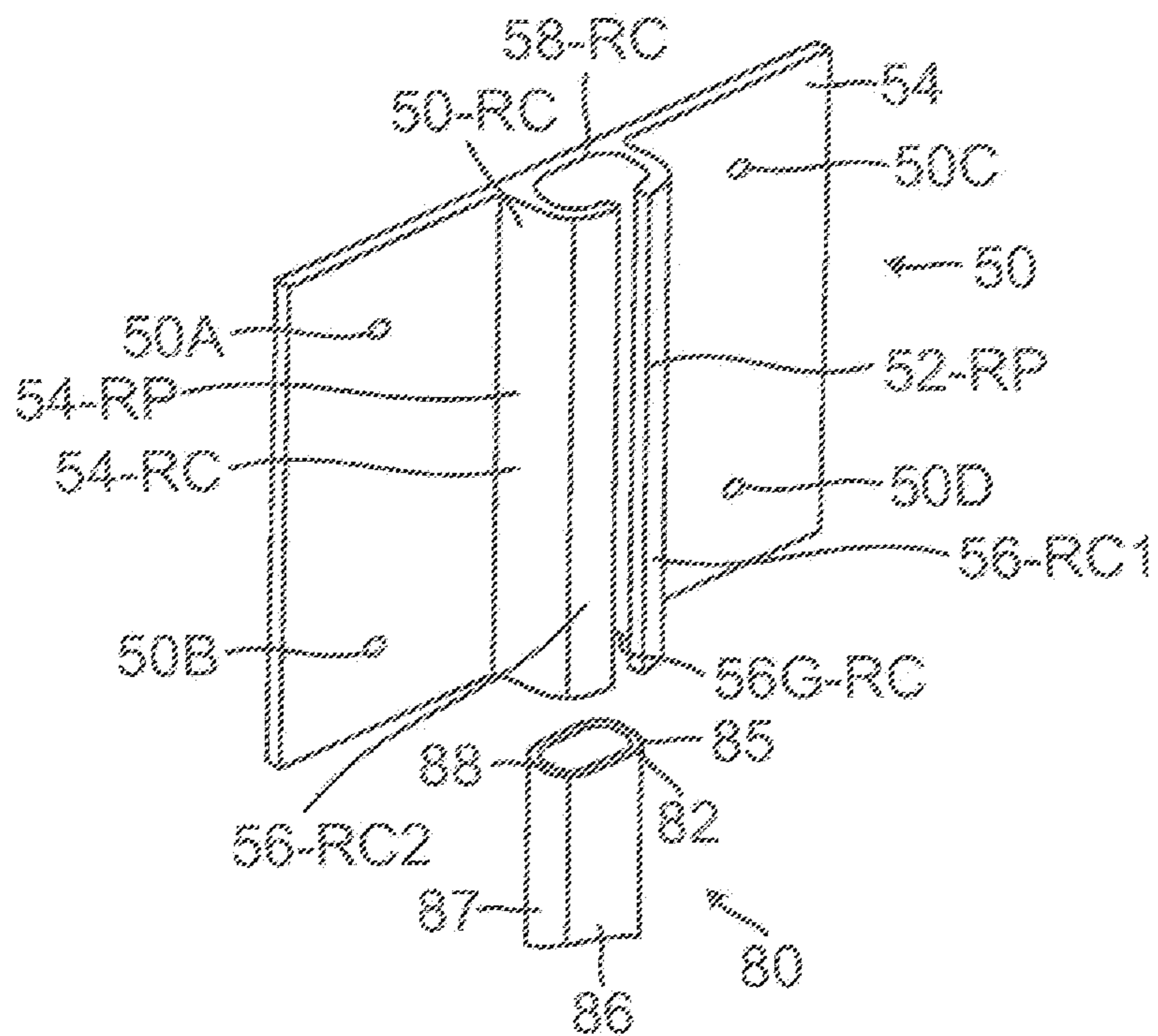


FIG. 3A

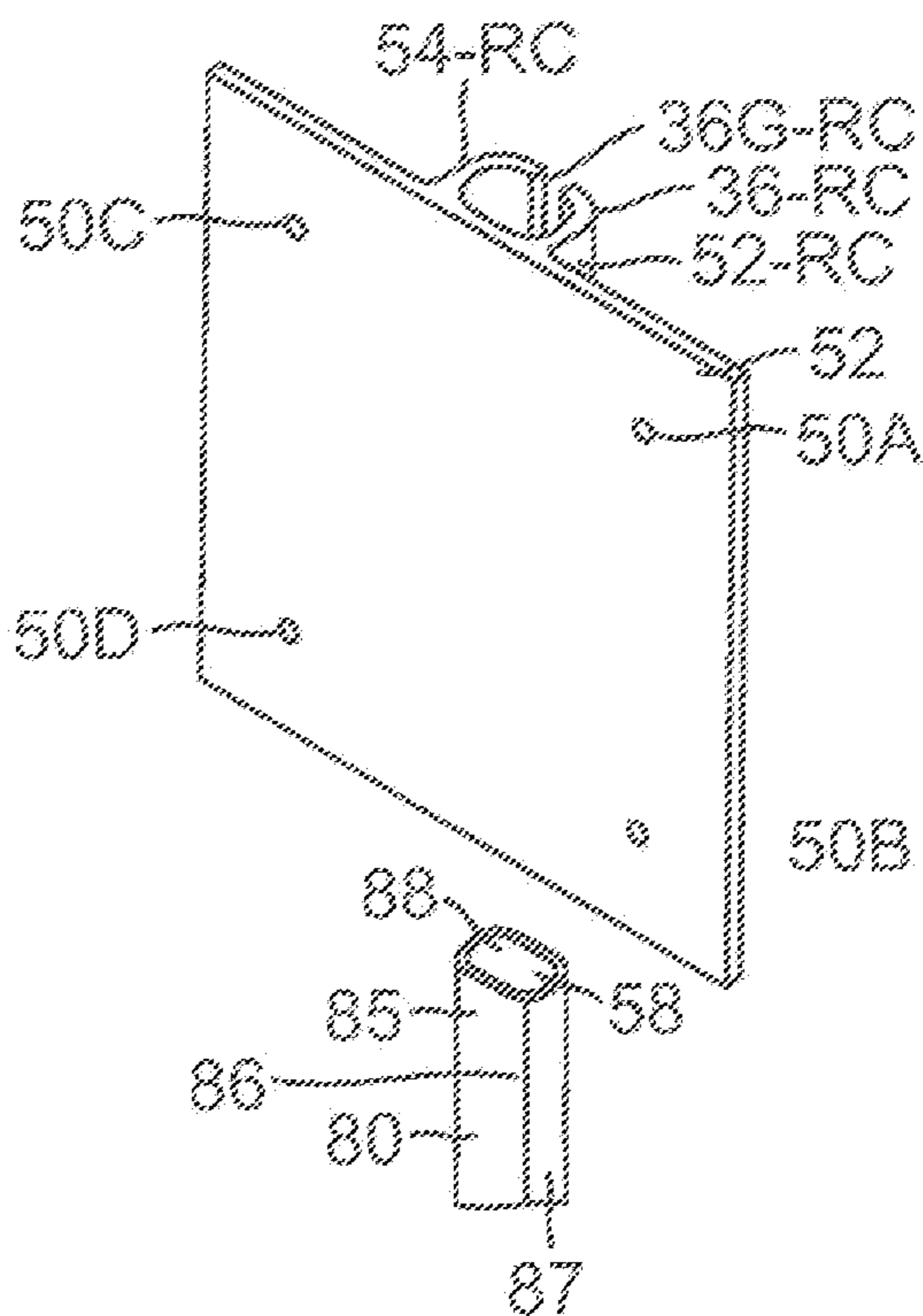


FIG. 3B

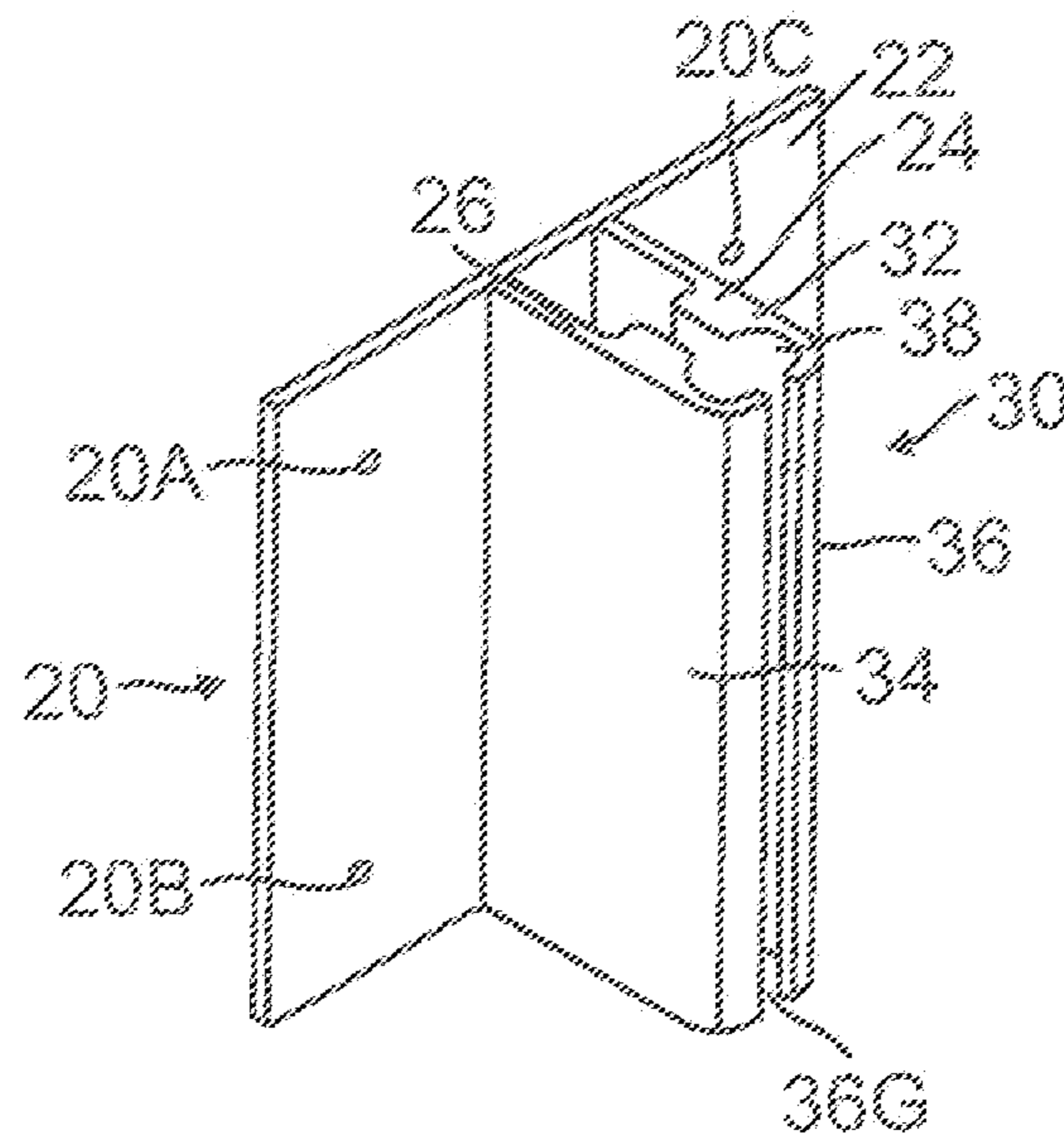


FIG. 4A

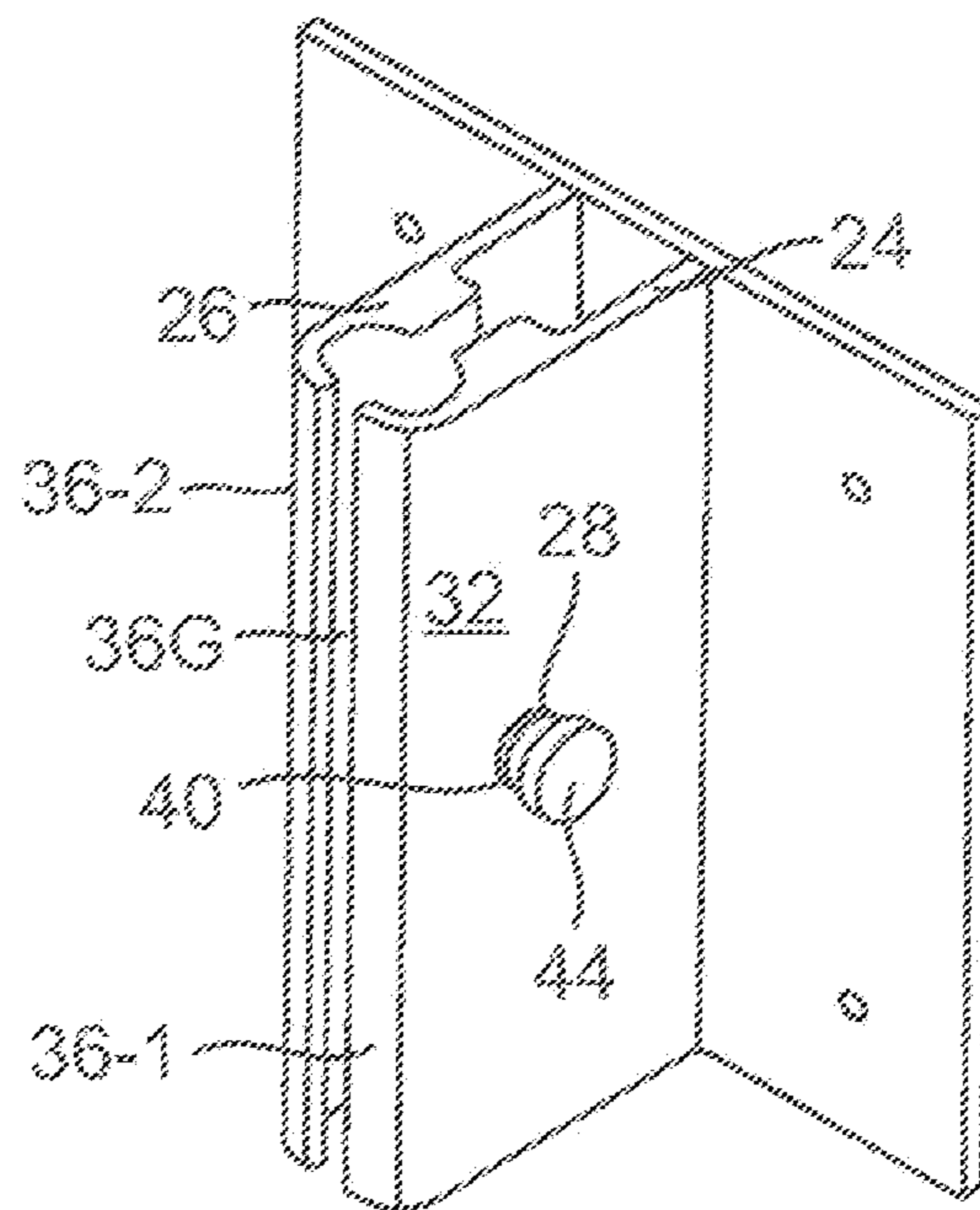


FIG. 4B

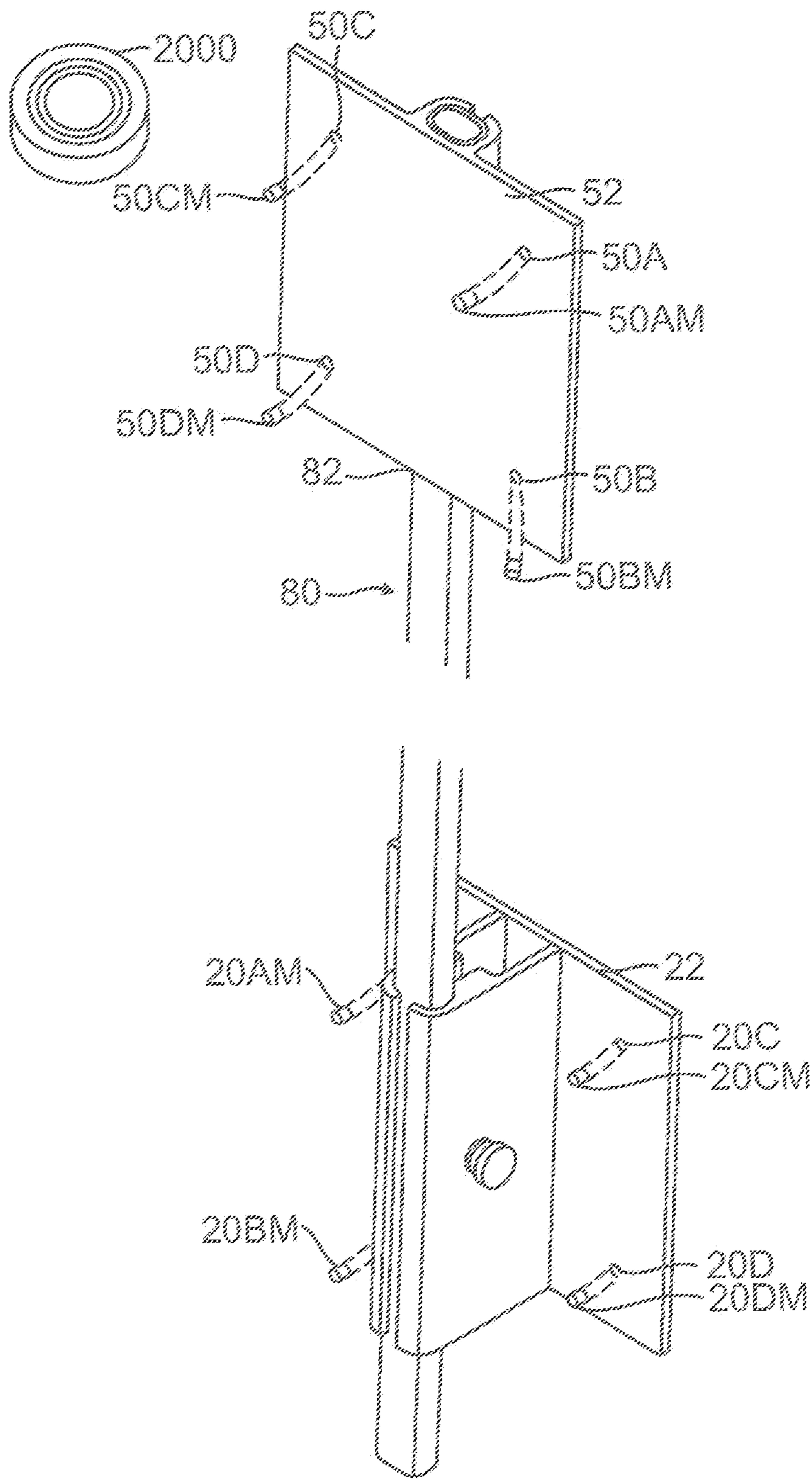


FIG. 4C

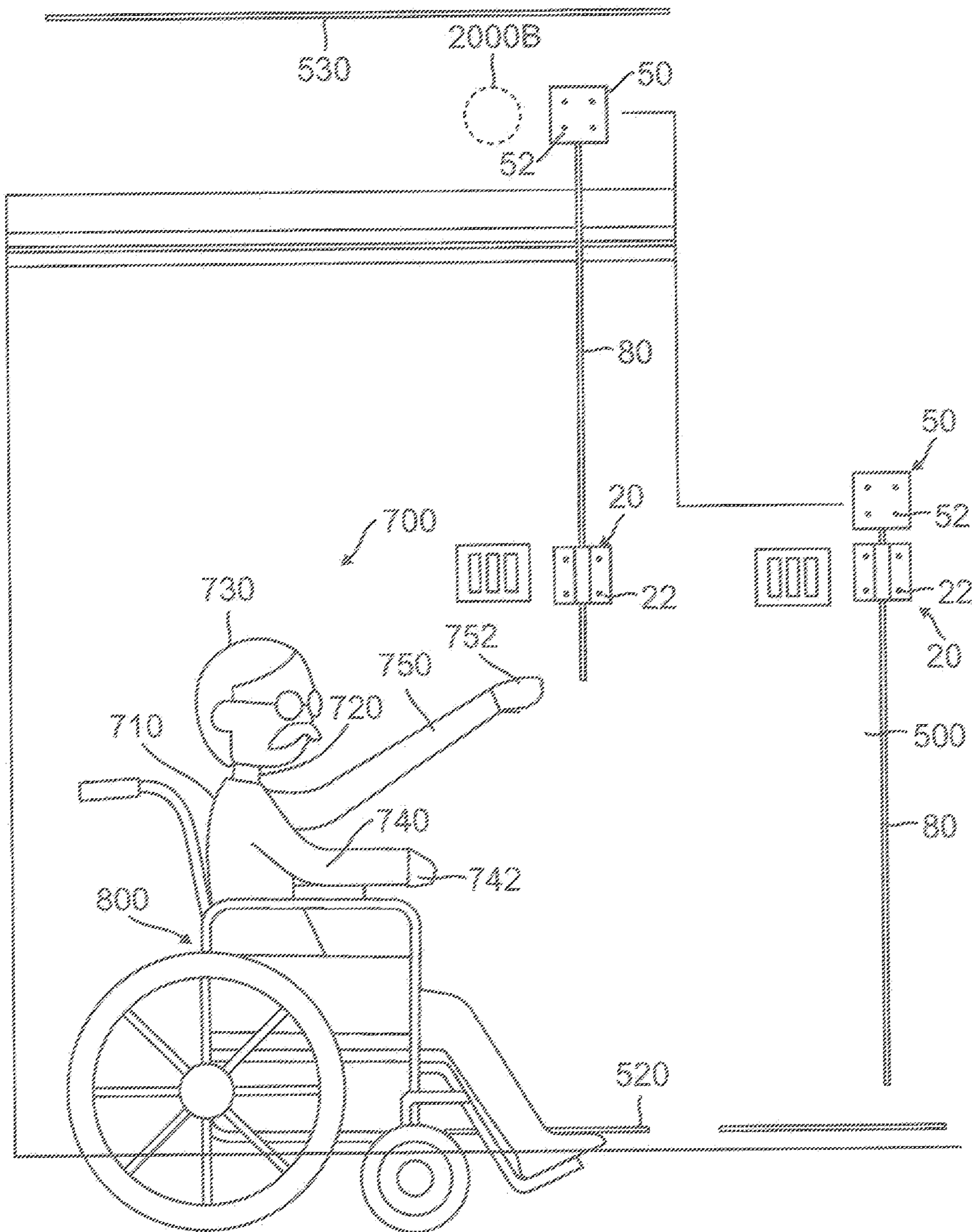


FIG. 5

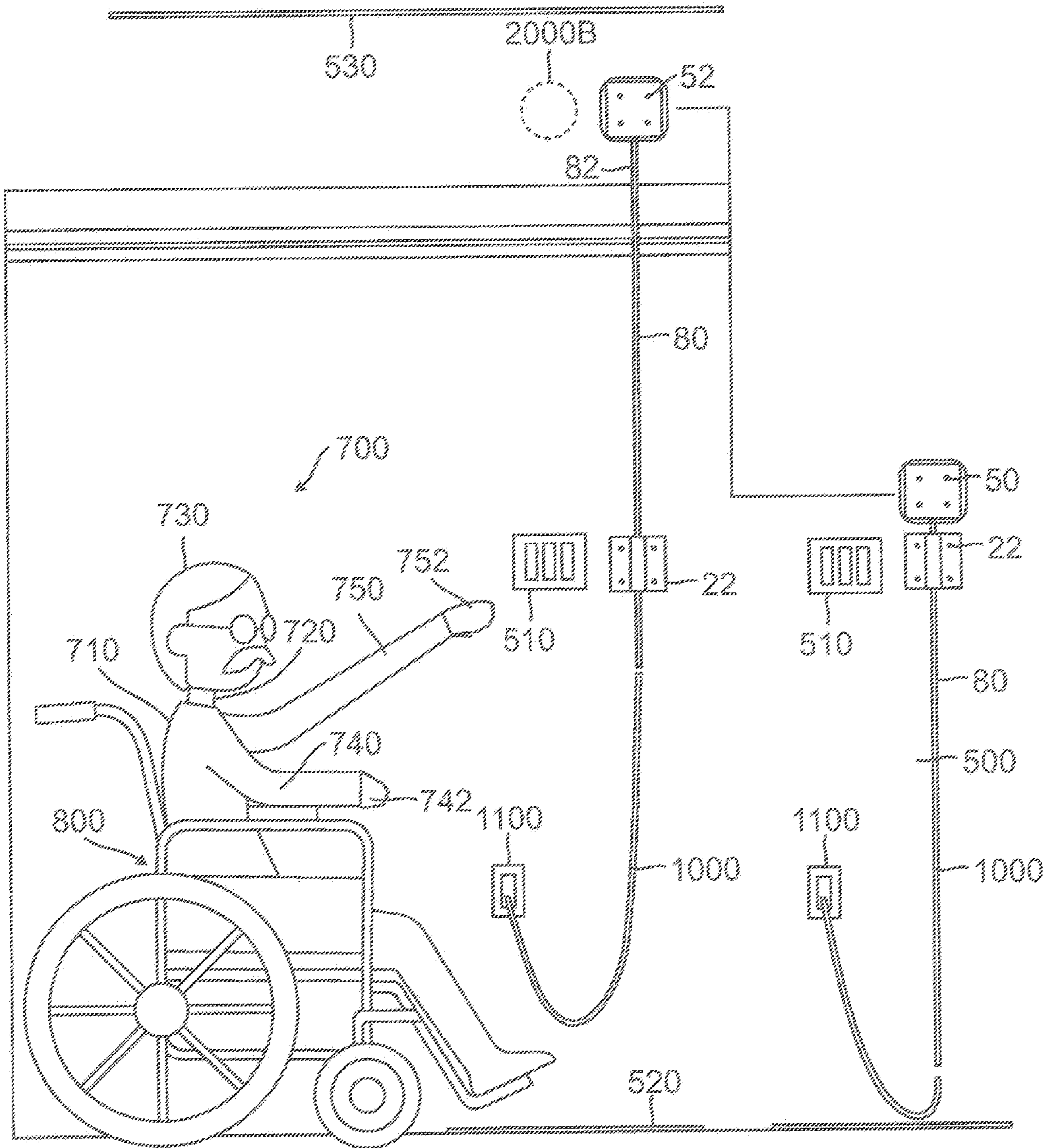


FIG. 6

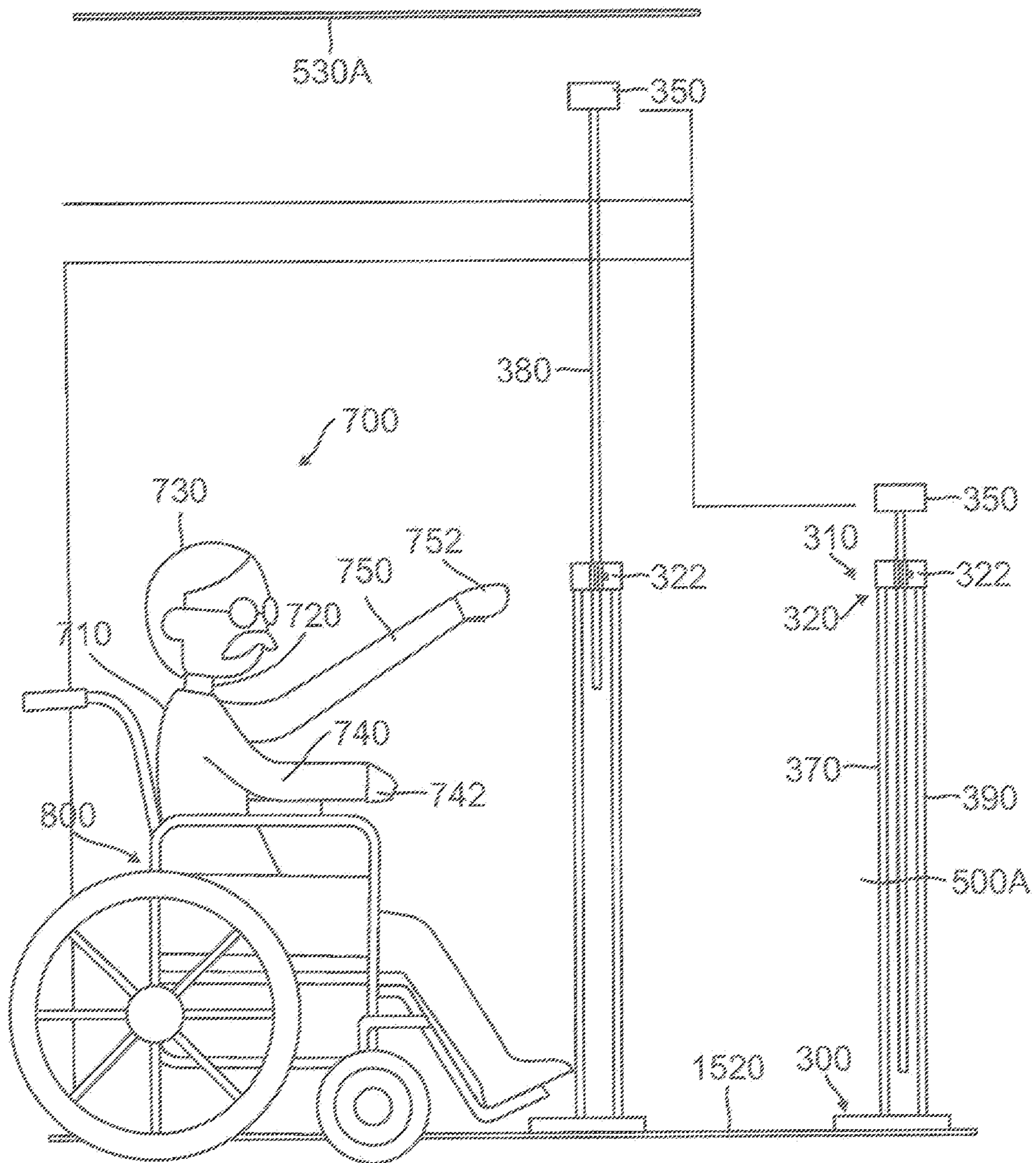


FIG. 7

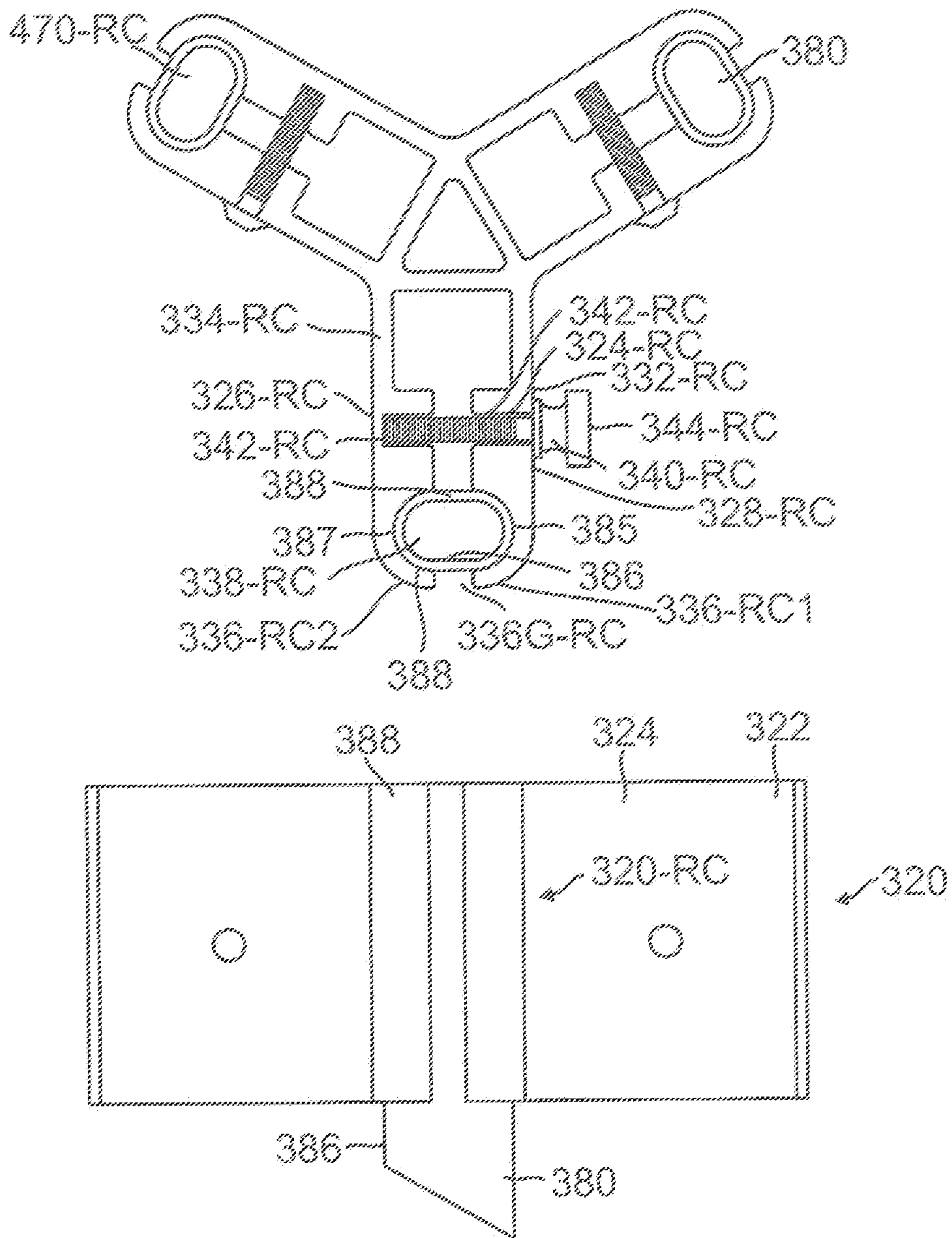


FIG. 8A

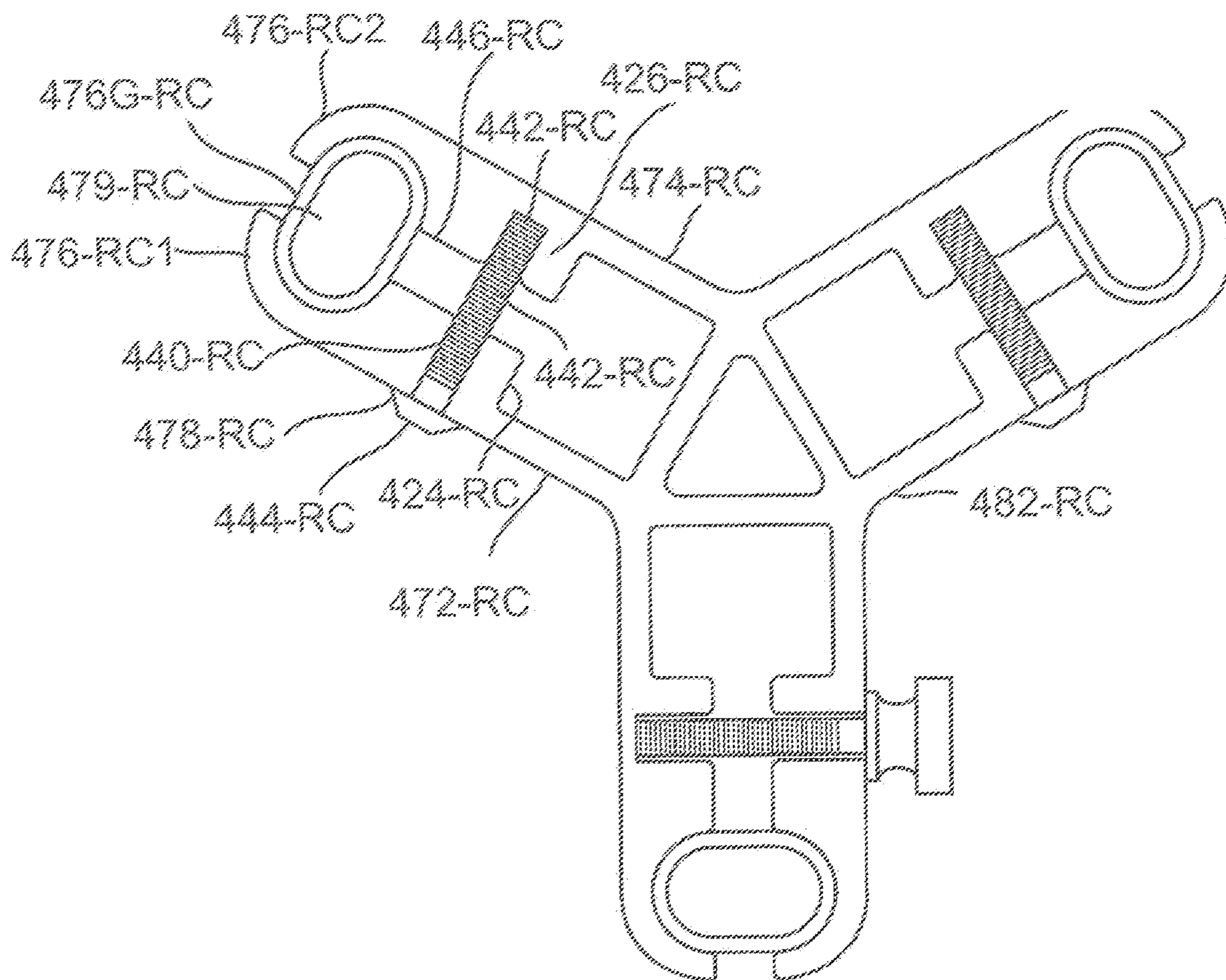


FIG. 8B

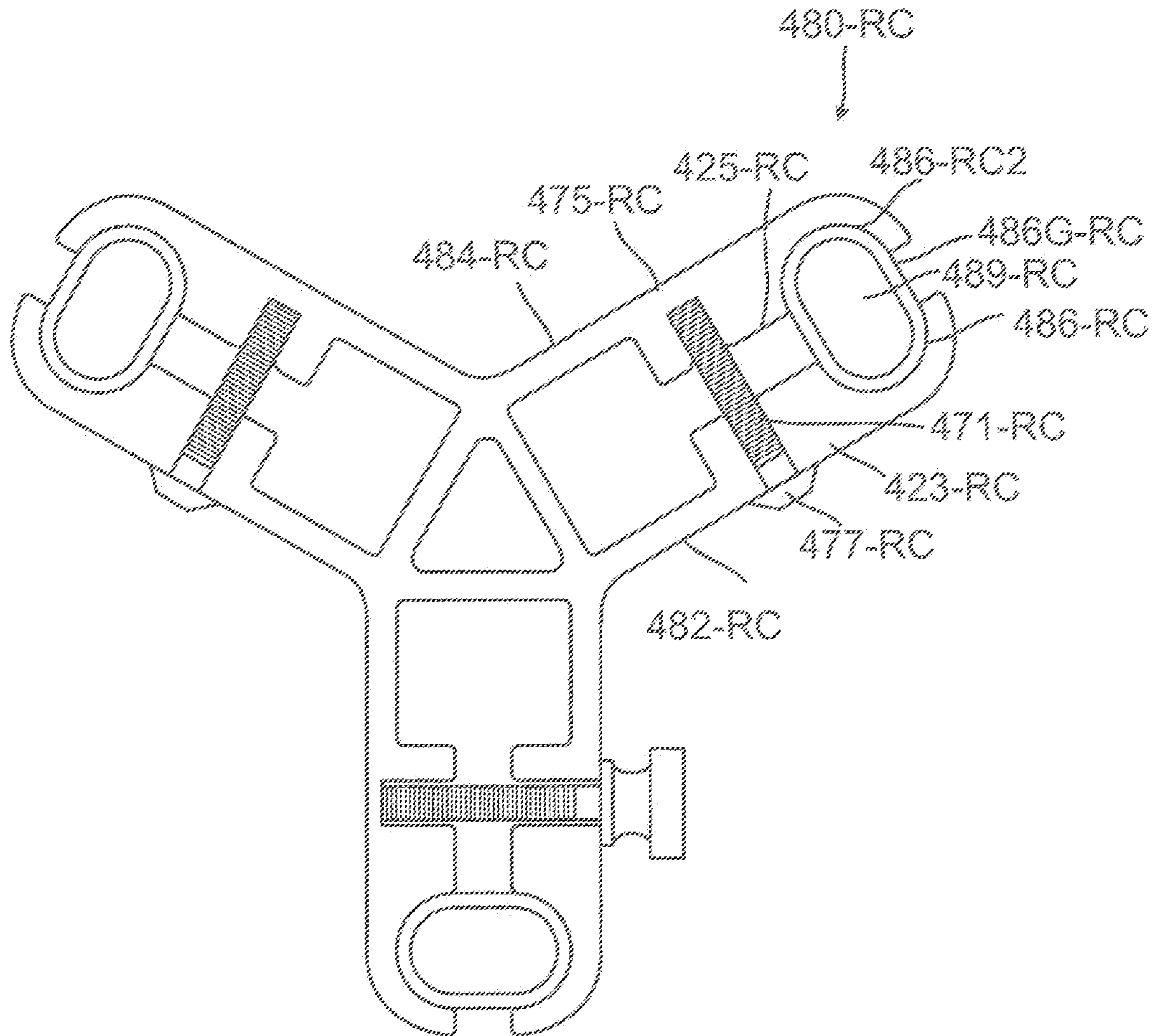


FIG. 8C

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**APPARATUS TO ENABLE A HANDICAPPED
PERSON TO INSTALL AND SERVICE A
DEVICE ADJACENT A CEILING**

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of enabling a handicapped person, especially wheelchair bound persons, to install and service a device which is located adjacent a ceiling of a structure.

2. Description of the Prior Art

The following eight patents and published patent applications are the closest prior art related to the field of the invention which are known to the inventor.

1. U.S. Pat. No. 5,149,038 issued to Richard A. VanCleve on Sep. 22, 1992 for "Mounting Device for Smoke Alarm".
2. U.S. Pat. No. 5,281,954 issued to Frank Harrison on Jan. 25, 1994 for "Device for Replacing Battery in Smoke Alarm".
3. U.S. Pat. No. 5,380,967 issued to Carson D. Steen et al, on Jan. 10, 1995 for "Extension Actuator for Electrical Wall Switch".
4. U.S. Pat. No. 5,594,422 issued to Richard W. Huey et al, on Jan. 14, 1997 for "Universally Accessible Smoke Detector".
5. U.S. Pat. No. 6,036,330 issued to Michael Sanguedolce on Mar. 14, 2000 for "Light Switch Extender".
6. U.S. Pat. No. 7,233,254 issued to Byron H. Howell on Jun. 19, 2007 for "Lowerable Smoke Detector".
7. United States Published Patent Application No. 2008/0117064 to Jeong-Hun Shin on May 22, 2008 for "Fire Detector Having a Lifting Function".
8. U.S. Pat. No. 8,371,547 issued to Kathleen N. Wilkowske on Feb. 12, 2013 for "Detector Extender Support Systems".

SUMMARY OF THE INVENTION

The present invention is an apparatus for enable people who are handicapped, especially those who are wheelchair bound, to be able to install and replace objects that are affixed near the ceiling such as a smoke detector, a wireless doorbell, etc.

Tasks which are considered a simple operation for people who are fortunate enough to have no physical disability become difficult and virtually impossible for a handicapped person. Smoke detectors are most commonly mounted on a ceiling or on a vertical wall adjacent a ceiling. When the battery is no longer operable, the smoke detector emits a beeping signal. For a person who can climb a ladder, it is a simple task to place the ladder on the ground adjacent the location of the smoke detector, climb the ladder, remove the smoke detector cover, replace the battery which is usually a nine-volt battery, replace the cover, and climb down the ladder. The simple task is impossible to perform for a wheelchair bound handicapped person.

It is a primary object of the present invention to create an apparatus which enables a wheelchair bound person to install and service a smoke detector located on a ceiling or locate on a vertical wall adjacent a ceiling.

In addition, other objects such as a wireless doorbell, burglar alarm with sensors, and numerous other electronic

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devices require mounting on or adjacent a ceiling of a structure, especially for home use.

It is a further object of the present invention to provide an apparatus which enables a person to install, and if necessary, service or remove and repair, a device located on or adjacent a ceiling while the person is seated in a chair such as a wheelchair.

It is a further object of the present invention to provide an apparatus which is mounted on a vertical wall adjacent a light switch used as a frame of reference for position height to locate the lower level of the apparatus. Using a wall light switch as a frame of reference, the location to the lower level of the apparatus enables a seated adult to grasp and work with elements of the apparatus incorporated into the lower level or upper level adjacent the lower level.

It is also an object of the present invention to incorporate into the apparatus an upper level to which the device, such as a smoke detector, is affixed. In addition, a vertical height adjusting member enables the seated person to affix, repair and service the device when the apparatus upper level is adjacent the apparatus lower level and then move the upper level through the height adjustment member to a location on or adjacent the structure and affixing the height adjustment member after the apparatus upper level retaining the device is at the desired location.

It is a further object of the present invention to provide an apparatus which is mounted on a floor adjacent a vertical wall where the device is to be affixed. The floor mounted apparatus includes a lower lever apparatus having a vertical height adjustment to position the lower apparatus within reach of a person seated in a chair such as a wheelchair. While the base height location is the height of a wall light switch, this height is suitable for an adult having a standing height of five feet ten inches to six feet or taller. For a shorter person, such as a smaller woman, the lower apparatus can be lowered to any level above the floor so that it can be reached and grasped by the shorter person.

It is additionally an object of the present invention to incorporate into the floor mounted apparatus an upper level to which the device, such as a smoke detector, is affixed. In addition, a vertical height adjusting member enables the seated person to affix, repair and service the device when the apparatus upper level is adjacent the apparatus lower level and then move the upper level through the height adjustment member to the desired level of the device. Then, after the apparatus upper level retaining the device is at the desired location, the height adjustment member is fixed.

The vertical height adjustment member is a pole selected from the group consisting of an elongated pole having at least a flat longitudinal surface for the portion facing the vertical wall, an elongated pole having two oppositely disposed flat longitudinal surfaces with one longitudinal flat surface portion facing the vertical wall, and a cylindrical elongated pole.

It is a further object of the present invention to provide an apparatus which is mounted on a vertical wall adjacent a light switch used as a frame of reference for position height to locate the lower level of the apparatus with the apparatus hard wired into electricity within the vertical wall. Using a wall light switch as a frame of reference, the location to the lower level of the apparatus enables a seated adult to grasp and work with elements of the apparatus incorporated into the lower level.

It is also an object of the present invention to incorporate into the apparatus an upper level to which the device, such as a smoke detector, is affixed. In addition, a vertical height adjusting member enables the seated person to affix, repair

and service the device when the apparatus upper level is adjacent the apparatus lower level. The upper level is then moved through the height adjustment member to a location on or adjacent the structure ceiling. The height adjustment member is affixed after the apparatus upper level retaining the device is at the desired location. The hard wiring is long enough to accompany the apparatus upper level to the final fixed location.

Further novel features and other objects of the present invention will become apparent from the following detailed description, discussion and the appended claims, taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring particularly to the drawings for the purpose of illustration only and not limitations, there is illustrated:

FIG. 1 is a front elevational view of a structure vertical wall with a wall light switch, a person seated in a wheelchair with hands elevated, and a front view of the present invention apparatus lower level, the upper level and the vertical height adjustment member.

FIG. 2 is an exploded view with a front plan view of the present invention upper section and the upper section vertical height adjustment retaining member and a front perspective view of the present invention lower section and the lower section vertical height adjustment retaining member.

FIG. 3A is an enlarged rear perspective view of the upper section.

FIG. 3B is an enlarged front perspective view of the upper section.

FIG. 4A is an enlarged front left side perspective view of the lower level plate.

FIG. 4B is an enlarged front right side perspective view of the lower level plate.

FIG. 4C is an exploded view illustrating the lower plate and how it retains the vertical height adjustment retaining member and the upper plate retained by its vertical height adjustment retaining member, and a smoke detector illustrated exploded away from, the upper plate.

FIG. 5 is a front elevational view illustrating the second plate with the device moved to adjacent the ceiling, a person seated in a wheelchair after raising the second plate.

FIG. 6 is a front elevational view illustrating the second plate with the device moved to adjacent the ceiling, with the device electrically hardwired a person seated in a wheelchair after raising the second plate.

FIG. 7 is a front elevational view of all structure vertical wall, a person seated in a wheelchair, and a front view of an alternative embodiment of the present invention apparatus lower level movably affixed on a pair of poles affixed to a floor plate, the upper level and the vertical height adjustment member.

FIG. 8A is an exploded view with a front plan view of the lower plate of alternative embodiment of the present invention with a top plan view of the front height adjustment mechanism.

FIG. 8B is an exploded view with a front plan view of the lower plate of alternative embodiment of the present invention with a top plan view of the left pole height adjustment mechanism.

FIG. 8C is an exploded view with a front plan view of the lower plate of alternative embodiment of the present invention with a top plan view of the right pole height adjustment mechanism.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE PRESENT INVENTION

Although specific embodiments of the present invention will now be described with reference to the drawings, it should be understood that such embodiments are by way of example only and merely illustrative of but a small number of the many possible specific embodiments which can represent applications of the principles of the present invention. Various changes and modifications obvious to one skilled in the art to which the present invention pertains are deemed to be within the spirit, scope and contemplation of the present invention as further defined in the appended claims.

Referring to FIG. 1, there is illustrated a front elevational view of structure vertical wall **500** with a wall light switch **510** which is typically at a conventional height "H-LTS" of anywhere from forty-eight inches to fifty-two inches from the floor **520**. Also illustrated is a side perspective view of a person **700** seated in a wheelchair **800**. The illustration of the person **700** shows the rear portion of the torso **710**, the person's neck **720**, the person's head **730** and the person's right arm **740** and right hand **742** lowered and the person's left arm **750** and left hand **752** raised. The first embodiment of the present invention **10** includes a lower section **20** affixed to the vertical wall **500** at a vertical height "H-LWS" above the floor **520**. In a preferred location, the lower section **20** is aligned with the light switch **510** and spaced apart from the light switch **510** so that it is within reach of the person's hands **742** and **752**. It will be appreciated that it is within the spirit and scope of the present invention for the lower section **20** to be located at any portion of the vertical wall **500** as long as it can be reached by the seated person's hands **742** and **752** and allows for length of a vertical height adjusting member **80** which will be discussed.

Further referring to FIG. 1, there is illustrated the apparatus upper level **50** affixed to a top end **82** of a vertical height adjusting member **80** which is an elongated column also including a bottom end **81**. When lowered, the apparatus upper level **50** must be within reach of the seated person's hands **742** and **752**.

Referring to FIG. 2, there is illustrated an exploded view with a front elevational view of the present invention upper level **50** upper front plate **52** permanently affixed to a top **82** of vertical height adjustment member **80**. As illustrated in the plan view behind upper front plate **52**, the rear surface **54** is integrally formed with upper vertical height adjustment member retaining column **50-RC** having a first transverse wall **52-RC**, a parallel second transverse wall **54-RC** and the arcuate front ends **86-TC1** and **86RC2** with a central gap **56G-RC** surrounding a generally oval opening **58**. The first transverse wall **52-RC** includes a first retaining pin **52-RP** inserted into one rounded end of vertical height adjustment member **80**. The second transverse wall **54-RC** includes a second retaining pin **54-RP** inserted into an opposite rounded end of vertical height adjustment member **80**. The upper front plate **52** is located in front of present invention lower section **20** to enable the seated person **700** to work on the device affixed to upper front plate **52**.

Further referring to the lower portion of FIG. 2, there is illustrated a front plan view of the apparatus lower level plate **22** having four attachment openings **20A**, **20B**, **20C** and **20D**. Also illustrated in a separate view is a top view of one embodiment of the vertical height adjustment member retaining column **30** having a first transverse wall **32**, a parallel second transverse wall **34** and the arcuate front ends **36-1** and **36-2**, with a central gap **36G** surrounding a

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generally oval opening **38**. The first transverse wall **32** includes a threaded opening **28** (alternatively, an unthreaded opening) with a first interior thread mating wall **24** through which a threaded retaining bolt **40** extends and ends a second interior threaded mating wall **26**. The threaded retaining bolt **40** includes a threaded shaft **42** and a head **44**. The threaded shaft **42** is threaded through threaded openings **24** and **26** and is stopped outside first transverse wall **32** by head **44**.

The detailed components are best illustrated in the enlarged views. FIG. **3A** is an enlarged rear perspective view of the upper section **50** and FIG. **3B** is an enlarged front perspective view of the upper section **50**. Referring to FIGS. **3A** and **3B**, the upper level **50** upper front plate **52** is permanently affixed to a top **82** of vertical height adjustment member **80**. As illustrated in the rear perspective view of FIG. **3A** and front perspective view of FIG. **3B**, the rear surface **54** is integrally formed with upper vertical height adjustment member retaining column **50-RC** having a first transverse wall **52-RC**, a parallel second transverse wall **54-RC** and the arcuate front ends **56-RC1** and **56-RC2**, with a central gap **56G-RC** surrounding a generally oval opening **58-RC**. The vertical height adjustment member **80** has an oval cross section with oppositely disposed longitudinal flat surfaces **86** and **88** with rounded ends **85** and **87**. The first transverse wall **52-RC** includes a first retaining pin **52-RP** inserted into one rounded end **85** of vertical height adjustment member **80**. The second transverse wall **54-RC** includes a second retaining pin **54-RP** inserted into an opposite rounded end **87** of vertical height adjustment member **80**. The threaded retaining bolt **40** is tightened to cause the vertical height adjustment member **80** to be fixed in a given position. The upper front plate **52** is located in front of present invention lower section **20** to enable the seated person **700** to work on the device affixed to upper front plate **52**.

While described as oval, it will be appreciated that it is within the spirit and scope of the present invention for the vertical height adjustment member **80** to be any shape including cylindrical with a round cross-section and the opening in the retaining column **50-RC** to have a marching shape such as round.

Referring to FIG. **4A**, there is illustrated a left side perspective view of the lower level plate **22** of the lower level **20**. Referring to FIG. **4B**, there is illustrated a right side perspective view of the lower level plate **22** of the lower level **20**. Referring to FIGS. **2**, **4A** and **4B**, there is illustrated the lower level plate **22** having four attachment openings **20A**, **20B**, **20C** and **20D**. Also illustrated is the vertical height adjustment member retaining column **30** having a first transverse wall **32**, a parallel second transverse wall **34** and the arcuate front ends **36-1** and **36-2** with a central gap **36G** surrounding a generally oval opening **38**. The first transverse wall **32** includes a threaded opening **28** (alternatively the opening is an unthreaded hole) with a first interior threaded mating wall **24** through which a threaded retaining bolt **40** extends and ends a second interior threaded mating wall **26**. The threaded retaining bolt **40** includes a threaded shaft **42** and a head **44**. The threaded shaft **42** is threaded through threaded mating walls **24** and **26** and is stopped outside first transverse wall **32** by head **44**.

Referring to FIG. **4C**, there is illustrated an exploded view illustrating the lower plate **22** and how it retains the vertical height adjustment retaining member **80** and the upper plate **52** retained by its vertical height adjustment retaining member **80**, and a smoke detector **2000** exploded away from, the upper plate **52**. The parts have already been described. Mating screws **50AM**, **50BM**, **50CM** and **50DM** are used to

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affix smoke detector **2000** to upper plate **52** through respectively aligned openings **50A**, **50B**, **50C** and **50D**. A key feature is that the upper plate **52** is retained in front of the lower plate **22** which is affixed to vertical wall **500** by mating screws **20AM**, **20BM**, **20CM** and **20DM** respectively aligned with openings **20A**, **20B**, **20C** and **20D**. Referring to FIG. **4C**, there is illustrated present invention apparatus upper level retaining plate **52** affixed to the top **82** of the vertical height adjustment member **80** with four attaching openings **50A**, **50B**, **50C** and **50D** with a smoke detector illustrated in broken lines **2000** attached to the upper retaining plate, illustrating the lower level retaining plate **20** with the components previously identified.

The lower plate **20** is affixed to the vertical wall **500** at the height as described in FIG. **1**. The second plate **52** is lowered so that it is slightly above and in front of first plate **22**. The device **2000**, such as the smoke detector, is affixed to the second plate **52**. The wheelchair bound person **700** installs the smoke detector **2000**, replaces a battery, while the second plate is in the lowered position.

As illustrated in FIG. **5**, after the person **700** has installed the device or replaced a battery in the smoke detector **2000** while the second plate **52** is lowered adjacent the first plate, as illustrated in FIG. **5**, the person pushes upwardly on the vertical height adjustment member **80** to raise the second plate **52** to the desired height adjacent the ceiling **530** and then causes the bolt **40** to affix the vertical height adjustment member **80** as previously described. The person in the wheelchair has already been described in FIG. **1** and is illustrated again in FIG. **5** with the raised left hand **52** against the bottom of height adjustment member **80**.

If the smoke detector is hard wire into an electrical outlet **1100**, the apparatus is the same but the electrical wire **1000** needs to be long enough to move to the location near the ceiling, as illustrated in FIG. **6**.

Referring to FIG. **6**, there is illustrated present invention apparatus upper level retaining plate **52** affixed to the top **82** of the vertical height adjustment member **80** with four attaching openings **50A**, **50B**, **50C** and **50D** with a smoke detector illustrated in broken lines **2000B** attached to the upper level retaining plate **52**, illustrating the lower level retaining plate **22** with the components previously identified. In FIG. **6**, the device is electrically hard wired with an electrical cable **1000** hard wired into an electrical outlet **1100**. The operation is the same as previous described but the electrical cable **1000** needs to be long enough to reach the ceiling level where the device **2000B** is affixed to second plate **52** is raised.

After the device, such as smoke detector **2000** is installed onto apparatus upper retaining plate **52** or serviced such as changing a battery, the person pushes upwardly on the oval shaped vertical height adjustment member **80** until the apparatus upper level retaining plate **52** is adjacent ceiling **530** on an adjacent vertical wall **500** and the threaded retaining **40** is tightened as previously described to affix the apparatus upper vertical plate **52** with smoke detector to adjacent the ceiling **530** as illustrated in FIGS. **5** and **6**. The person in the wheelchair has already been described in FIG. **1** and is illustrated again in FIG. **6** with the raised left hand **52** against the bottom of height adjustment member **80**.

Therefore, through the present invention, a handicapped person seated in a wheelchair can install and service a device positioned at a vertical height adjacent a ceiling **530** of the structure.

Referring to FIG. **7**, there is an alternative variation of the present invention **310** wherein there is a floor mounted plate assembly. There is a plate **300** attached to the floor **1520** and

then a pair of poles **370** and **390** affixed to the plate **300**. The poles support present application lower section **320** which includes a lower plate **322** affixed at a height which is reachable by an adult seated in a wheelchair. The distance from the lower plate **322** to the ground floor **1520** is initially between forty-eighty and fifty-two inches. The lower plate **322** includes a front retaining member to retain the vertical height adjustment member **380**. The person seated in a wheel chair has already been described in FIG. **1** and is illustrated with the person's left hand **752** at the bottom of height adjustment member **380** after the top section which will retain an object such as a smoke detector has been raised to a location adjacent the ceiling **530A**.

Referring to FIG. **8A**, there is illustrated an exploded view with a front elevational view of the present invention lower level **320** lower front plate **322**. As illustrated in the plan view behind the lower front plate **322**, the front surface **324** is integrally formed with lower vertical height adjustment member retaining column **320-RC** having a first transverse wall **332-RC**, a parallel second transverse wall **334-RC** and the arcuate front ends **336-RC1** and **336-RC2** with a central gap **336G-RC** surrounding a generally oval opening **338-RC**. The first transverse wall **332-RC** includes a threaded opening **328-RC** with a first interior threaded mating walls **324-RC** through which a threaded retaining bolt **340-RC** extends and ends a second interior threaded mating wall **326-RC**. The threaded retaining bolt **340-RC** includes a threaded shaft **342-RC** and a head **344-RC**. The threaded shaft **342-RC** is threaded through threaded mating walls **324-RC** and **326-RC** and is stopped outside first transverse wall **332-RC** by head **344-RC**. The vertical height adjustment member **380** has an oval cross section **384** with oppositely disposed longitudinal flat surfaces **386** and **388** with rounded ends **385** and **387**. The threaded retaining bolt **340-RC** is tightened to cause the vertical height adjustment member **380** to be fixed in a given position.

The upper plate section **350** is identical to the first embodiment **50** and is retained at the top **382** of vertical height adjustment member **380** and retains the operational device **2000** in the same way previously described. When the operation on device **2000** is completed, the vertical height adjustment member **380** is raised to a location adjacent vertical wall **500-A** and adjacent ceiling **530A**. The threaded retaining bolt **340-RC** is tightened as previously described to affix the upper plate **352** as previously described.

The one addition is that the height of lower plate **322** is adjustable. Each pole **370** and **390** is oval in cross section and is movably retained by lower plate adjustment members **470** and **490**.

Referring to FIG. **8B**, lower plate adjustment member includes a first transverse wall **472-RC**, a parallel second transverse wall **474-RC** and the arcuate front ends **476-RC1** and **476-RC2** with a central gap **476G-RC** surrounding a generally oval opening **479-RC**. The first transverse wall **472-RC** includes a threaded opening **478-RC** with a first interior threaded mating wall **424-RC** through which a threaded retaining bolt **440-RC** extends and ends a second interior threaded mating wall **426-RC**. The threaded retaining bolt **440-RC** includes a threaded shaft **442-RC** and a head **444-RC**. The threaded shaft **442-RC** is threaded through threaded mating walls **424-RC** and **426-RC** and is stopped outside first transverse wall **432-RC** by head **444-RC**. The lower plate **322** is lowered on pole **370** to a desired height above plate **300** and threaded bolt **344-RC** is tightened.

Referring to FIG. **8C**, similarly, lower plate adjustment member for second pole **390** includes transverse wall **482-RC**, a parallel second transverse wall **484-RC** and the arcuate front ends **486-RC1** and **486-RC2** with a central gap **486G-RC** surrounding a generally oval opening **489-RC**. The first transverse wall **482-RC** includes a threaded opening **488-RC** with a first interior threaded mating wall **423-RC** through which a threaded retaining bolt **475-RC** extends and ends a second interior threaded mating wall **425-RC**. The threaded retaining bolt **475-RC** includes a threaded shaft **471-RC** and a head **477-RC**. The threaded shaft **471-RC** is threaded through threaded mating walls **423-RC** and **425-RC** and is stopped outside first transverse wall **482-RC** by head **477-RC**. The lower plate **322** is lowered on pole **390** to a desired height above plate **300** and threaded retaining bolt **475-RC** is tightened.

If the height of vertical height adjustment member **380** is too tall to enable lowering of first plate **322** and therefore second plate **352**, it is also within the spirit and scope of the present invention for the vertical height adjustment member **380** to be hinged and folded upon itself to be shortened to accommodate lowering first and second plates.

Therefore, the present invention **310** not only enables a wheelchair bound person to work on a device **2000** which is positioned at an elevated height; but also adjusts the height of where the device is lowered for smaller wheelchair bound people.

Of course the present invention is not intended to be restricted to any particular form or arrangement, or any specific embodiment, or any specific use, disclosed herein, since the same may be modified in various particulars or relations without departing from the spirit or scope of the claimed invention hereinabove shown and described of which the apparatus or method shown is intended only for illustration and disclosure of an operative embodiment and not to show all of the various forms or modifications in which this invention might be embodied or operated.

What is claimed is:

1. An apparatus to enable a seated person to work on a device located adjacent a vertical wall and adjacent a ceiling of a room the room also including a floor adjacent the vertical wall, the apparatus comprising:

(a) a vertical height adjustment member formed in an elongated column having an oval cross-section including a first flat surface and a parallel opposite second flat surface, each flat surface terminating at one end in a first rounded end and terminating at an opposite end in a second rounded end, the vertical height adjustment member including a top end and a bottom end;

(b) a lower level including:

(i) a plate attached to the floor;

(ii) a first pole affixed to said plate and a parallel spaced apart second pole affixed to said plate;

(iii) said first pole and said second pole support a lower section which includes a lower front plate, the lower front plate has a front surface integrally formed with a lower vertical height adjustment member retaining column having a first transverse wall with a threaded opening a parallel second transverse wall, arcuate front end walls with a central gap surrounding a generally oval opening sized to receive said vertical height adjustment member,

(iv) a first threaded retaining bolt including a threaded shaft and a head, the first transverse wall including a threaded opening with a first interior threaded mating wall and a second interior threaded mating wall,

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- (v) the threaded shaft of the first threaded retaining bolt is threaded through the threaded opening in the first transverse wall, threaded through the first interior threaded mating wall and threaded through the second interior threaded mating wall, and tightened to retain the vertical height adjustment member in place, with the head of the first threaded retaining bolt stopped outside the first transverse wall;
- (c) an upper level including:
- (i) an upper front plate having a rear surface integrally formed with an upper vertical height adjustment member retaining column having a first transverse wall, a parallel second transverse wall, an arcuate front end with a central gap surrounding a generally oval opening sized to receive said vertical height adjustment member, the upper vertical height adjustment member retaining column permanently retaining a top section adjacent the top end of the vertical height adjustment member through a first retaining pin inserted into an opening in one portion of the arcuate front end and into one rounded end of the vertical height adjustment member and a second retaining pin inserted into an opposite opening in a second portion of the arcuate front end and into an opposite rounded end of the vertical height adjustment member,
- (ii) the upper front plate including a multiplicity of openings to respectively receive a respective attaching member to attach a device to the upper front plate,
- (iii) said upper front plate is lowered by said vertical height adjustment member to be positioned in front of the lower front plate to enable the seated person to work on said device affixed to the upper front plate; and
- (d) after the work on the device is completed, the seated person pushes upwardly adjacent the bottom end of the vertical height adjustment member until the upper plate with attached device is adjacent a ceiling level and the threaded bolt in the lower level is tightened as described to enable the device to be in a fixed position adjacent the ceiling.
- 2.** The apparatus in accordance with claim 1, further comprising:
- (a) a height of said lower plate is adjustable, said first pole is oval in cross-section and said lower plate is movably retained by a first lower plate adjustment member and said second pole is oval in cross-section and said lower plate is movably retained by a second lower plate adjustment member,
- (b) said first lower plate adjustment member includes:
- (i) a third transverse wall, a parallel fourth transverse wall, arcuate front end walls with a central gap surrounding a generally oval opening sized to receive said first pole,
- (ii) a second threaded retaining bolt including a threaded shaft and a head, the third transverse wall including a threaded opening with a third interior threaded mating wall and a fourth interior threaded mating wall,
- (iii) the shaft of the second threaded retaining bolt is threaded through the threaded opening in the third transverse wall, threaded through the third interior threaded mating wall and threaded through the fourth interior threaded mating wall, and tightened to retain the first lower plate adjustment member in place,

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- with the head of the second threaded retaining bolt stopped outside the first transverse wall, and
- (c) said second lower plate adjustment member includes:
- (i) a fifth transverse wall, a parallel sixth transverse wall, arcuate front end walls with a central gap surrounding a generally oval opening sized to receive said second pole,
- (ii) a third threaded retaining bolt including a threaded shaft and a head, the sixth transverse wall including a threaded opening with a fifth interior threaded mating wall and a sixth interior threaded mating wall,
- (iii) the threaded shaft of the third threaded retaining bolt is threaded through the threaded opening in the sixth transverse wall, threaded through the fifth interior threaded mating wall and threaded through the sixth interior threaded mating wall, and tightened to retain the second lower plate adjustment member in place, with the head of the third threaded retaining bolt stopped outside the sixth transverse wall, and
- (d) wherein the second and third threaded retaining bolts are loosened to raise or lower the first plate to any desired level above the floor and thereafter tightened at a desired height above the floor.
- 3.** An apparatus to enable a seated person to work on a device located adjacent a vertical wall and adjacent a ceiling of a room, the room also including a floor adjacent the vertical wall, the apparatus comprising:
- (a) a vertical height adjustment member formed in an elongated column having a top end and a bottom end,
- (b) a lower level including:
- (i) a plate attached to the floor,
- (ii) a first pole affixed to said plate and a parallel spaced apart second pole affixed to said plate,
- (iii) said first pole and said second pole support a lower section which includes a lower front plate, the lower front plate has a front surface integrally formed with a lower vertical height adjustment member retaining column having a first transverse wall with an opening and a parallel second transverse wall, arcuate front walls with a central gap surrounding an opening sized to receive said vertical height adjustment member,
- (iv) a first threaded retaining bolt including a threaded shaft and a head, the first transverse wall including an opening with a first interior threaded mating wall and a second interior threaded mating wall,
- (v) the threaded shaft of the first threaded retaining bolt is inserted through the opening in the first transverse wall, threaded through the first interior threaded mating wall and threaded through the second interior threaded mating wall, and tightened to retain the vertical height adjustment member in place, with the head of the third threaded retaining bolt stopped outside the sixth transverse wall, and
- (c) an upper level including:
- (i) an upper front plate having a rear surface integrally formed with an upper vertical height adjustment member retaining column having a first transverse wall, a parallel second transverse wall, an arcuate front end with a central gap surrounding an opening sized to receive said vertical height adjustment member, the upper vertical height adjustment member retaining column permanently retaining a top section adjacent the top end of the vertical height adjustment member,

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- (ii) the upper front plate including at least one opening to receive at least one attaching member to attach a device to the upper front plate,
 - (iii) said upper front plate is lowered by said vertical height adjustment member to be positioned in front of the lower front plate to enable the seated person to work on said device affixed to the upper front plate, and
 - (d) wherein after the work on the device is completed, the seated person pushes upwardly adjacent the bottom end of the vertical height adjustment member until the upper plate with attached device is adjacent a ceiling level and the first threaded bolt in the lower level is tightened as described to enable the device to be in a fixed position adjacent the ceiling.
4. The apparatus in accordance with claim 3, further comprising:
- (a) a height of said lower plate is adjustable, said first pole is movably retained by a first lower plate adjustment member and said second pole is movably retained by a second lower plate adjustment member,
 - (b) said first lower plate adjustment member includes:
 - (i) a third transverse wall, a parallel fourth transverse wall, arcuate front end walls with a central gap surrounding an opening sized to receive said first pole,
 - (ii) a second threaded retaining bolt including a threaded shaft and a head, the third transverse wall including an opening with a third interior threaded mating wall and a fourth interior threaded mating wall,

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- (iii) the shaft of the second threaded retaining bolt is inserted through the threaded opening in the third transverse wall, threaded through the third interior threaded mating wall and threaded through the fourth interior threaded mating wall, and tightened to retain the first lower plate adjustment member in place, with the head of the second threaded retaining bolt stopped outside the third transverse wall, and
- (c) said second lower plate adjustment member includes:
 - (i) a fifth transverse wall, a parallel sixth transverse wall, arcuate front end walls with a central gap surrounding an opening sized to receive said second pole,
 - (ii) a third threaded retaining bolt including a threaded shaft and a head, the sixth transverse wall including an opening with a fifth interior threaded mating wall and a sixth interior threaded mating wall,
 - (iii) the threaded shaft of the third threaded retaining bolt is inserted through the threaded opening in the sixth transverse wall, threaded through the fifth interior threaded mating wall and threaded through the sixth interior threaded mating wall, and tightened to retain the second lower plate adjustment member in place, with the head of the third threaded retaining bolt stopped outside the sixth transverse wall, and
- (d) wherein the second and third threaded retaining bolts are loosened to raise or lower the first plate to any desired level above the floor and thereafter tightened at a desired height above the floor.

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